AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1-23 (cancelled)

24. (new) An oxygen conducting membrane comprising a mixed conducting dense membrane of multimetal oxide, one of the surfaces of which is covered with dispersed particles based on magnesium oxide or noble metals.

25. (new) The membrane according to claim 24, in which the particles based on magnesium oxide and/or noble metals have a diameter of between 5 and 3000 nm.

26. (new) The membrane according to claim 24, in which the dense mixed conducting membrane of multimetal oxide has a perovskite structure.

27. (new) The membrane according to claim 24, in which the dense mixed conducting layer comprises one or more multimetal oxides which comply with the general formula :

$$A_{1-x}\ A'_x\ B_{1-y}\ B'_y\ O_{3-z}$$

where

A and A', which may be the same or different, each represent a metal ion or an alkaline-earth metal or a metal which is selected from the lanthanide series;

B and B', which may be the same or different, each represent a metal ion and/or a mixture of metal ions in which the metal is selected from the transition metals;

$0 \leq x \leq 1$;

$0 \leq y \leq 1$;

z is a number which renders the charge of the compound neutral and which defines the oxygen deficiency.

28. (new) The membrane according to claim 27, in which A and A', which may be the same or different, represent La, Ca, Sr, and/or Ba.

29. (new) The membrane according to claim 27, in which B and B', which may be the same or different, are selected from Cr, Mn, Fe, Co, Ni and/or Cu.

30. (new) The membrane according to claim 27, in which the dense mixed conducting layer comprises multimetal oxide having the formula:

$$Ba_x\ Sr_{1-x}\ Co_{1-y}\ Fe_y\ O_{3-z}$$

where x, y and z are as defined in claim 6.

31. (new) The membrane according to claim 30, in which the multimetal oxide comprises $Ba_{0.5}\ Sr_{0.5}\ Co_{0.8}\ Fe_{0.2}\ O_{3-z}$.

32. (new) The membrane according to claim 24, in which the dense mixed conducting membrane of multimetal oxide has a thickness of between 0.5 and 10 mm.

33. (new) The membrane according to claim 24, in which the particles based on magnesium oxide or noble metals represent from 0.01 to 0.1% by weight of the dense membrane.

34. (new) The membrane according to claim 24, in which the particles are based on magnesium oxide.

35. (new) The membrane according to claim 34, in which the particles based on magnesium oxide are doped using vanadium.

36. (new) The membrane according to claim 24, in which the particles are particles of noble metals or alloys thereof.

37. (new) The membrane according to claim 24, in which the noble metals are selected from Pd, Pt, Rh, Ag, Au, Ru and Ir.

38. (new) A method for preparing oxygen conducting membranes as defined according to claim 1, comprising the steps consisting in:
a. providing the dense mixed conduction membrane;
b. preparing a colloidal suspension based on magnesium oxide in an organic solvent;
c. placing the suspension obtained in contact with the dense mixed conducting membrane; and
d. calcining the membrane obtained.

39. (new) A method for preparing oxygen conducting membranes as defined according to claim 24, comprising the steps consisting in:
a. providing the dense membrane of multimetal oxide; and
b. depositing the particles of noble metals or alloys thereof by means of laser vaporisation.

40. (new) A membrane reactor comprising an oxidation zone and a reduction zone which are separated by means of an oxygen conducting membrane as defined in claim 24.

41. (new) The membrane reactor according to claim 40, in which the oxidation zone is in contact with the surface of the membrane coated with dispersed particles based on magnesium oxide or noble metals.

42. (new) A method for oxidising a reactant gas comprising:
i) providing the membrane reactor according to claim 40;
ii) introducing the reactant gas into the oxidation zone;
iii) introducing the gas containing oxygen into the reduction zone;
iv) heating the membrane which separates the oxidation and reduction zones to an operating temperature.

43. (new) The method according to claim 40, in which the reactant gas is a light hydrocarbon which is oxidised into alkene.

44. (new) The method according to claim 40, in which the light hydrocarbon is ethane which is oxidised into ethylene.

45. (new) A method for recovering oxygen from a gaseous mixture containing oxygen, in which a membrane reactor according to toclaim 40 is used.